Guidelines 2023 to the PSC PhD Program Science & Policy

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1. PSC PhD Program in Sciences & Policy

1.1. Benefits

Welcome to the PhD Program in Sciences & Policy.

The natural sciences have strong implications for policymaking: in the fields of sustainable development, adaptation and mitigation potentials of climate change, food system changes, food security and sustainable agriculture; policies for land use changes, biodiversity conservation, regulations for genetically modified organisms; and policies and governance of the energy sector.

The world is changing. Critical challenges that we face for preserving our livelihood and a sustainable future for all, need reliable data and scientific evidence to inform policymaking.

Scientists need to engage with the policy world and stakeholders to be relevant and have their work incorporated into policy and societal debates. The PhD Program Science and Policy provides participants with the tools and skills they need to bridge science and policymaking.

The PhD Program Science and Policy train participants to improve strategies to communicate scientific evidence, risk and uncertainties towards policymakers, the media, and the public; to involve different stakeholder groups in participative processes, to build political support or to understand, why some topics do not make it to the political agenda.

This program is open for students from the life, environmental, climate, earth, engineering, energy, and food sciences disciplines.

The guidelines should help you to plan your doctoral studies and tailor your training to your needs. To be awarded with the PSC PhD Program Certification, you must complete 12 ECTS during your 3-year doctoral study.

1.2. Governance of the Program

This program has been approved as a structured training program by leading universities, the ETH Zurich (ETHZ), the Universities of Zurich and Basel (UZH, UNIBAS) and is part of Life Science Zurich Graduate School (LSZGS).

It is led by one representative of PSC Principal Investigators (PI, director: Prof Ueli Grossniklaus, UZH), PSC head of studies (Dr. Melanie Paschke, PSC) and the PSC PhD program coordinator (Dr. Luisa Last, PSC) who is your contact point for questions. Two times per year, there is a board meeting of PhD programs at LSZGS.

Each PhD program has the opportunity to elect one student's representative, giving the doctoral students a voice for decisions. The doctoral representatives from all LSZGS PhD programs elect four representatives who have voting rights during the board meetings of the LSZGS. The election will be reconfirmed every year.

2. Admission, Registration and Regulations

2.1. Admission to the PSC PhD Program

All PhD students can register for the PhD Program Science and Policy, but must be enrolled at the UZH, ETHZ or at the UNIBAS. The candidate is conditionally accepted to the PhD Program after requirements are fulfilled. Final acceptance depends on the formal admission requirements of the UZH, ETHZ or UNIBAS.

There are two tracks to join the PSC PhD Program. Track I covers recruitment via the Life Science Zurich Graduate School (LSZGS). Track II concerns direct applications to the Principal Investigator (PI). To ensure an equal application process of Track I and Track II, both tracks require a formal admission interview between PI and their future doctoral students, in accordance with the rules of the LSZGS (as of January 2013). The interview should be conducted in the presence of at least one other PI or faculty member, and the supervisor should fill out an interview protocol to be submitted to the program office. Contact your supervisor if you are a Track II student. Please find further information here: (https://www.plantsciences.uzh.ch/en/teaching/registration.html)

2.2. Registration for the PSC PhD Program

All necessary documents (incl. an overview of all necessary processes) can be downloaded on our webpage: www.plantsciences.uzh.ch/teaching/phdplantscience/procedures.html

For registration to the program fill the form provided on our webpage **within 3 months after the start of your PhD**. We will then send you a welcome package with all necessary documents. Within the first year of your PhD studies, you could also change to the PhD Program Plant Sciences program or other PhD programs. Please contact us to guide you through the process.

Registered doctoral students are requested to use independent data and document management systems. At these databases you need to upload documents certifying the progress of your studies (for example thesis committee meeting protocols, certificates of courses, etc.).

ETHZ
→ **Dissertation Go (DissGo)**: https://www.dissgo.uzh.ch/login (for documentation of course work carried out in the program. You will receive your login after having sent the registration form for the PhD Program.

→ **ETH MyStudies** (**https://myStudies.ethz.ch)** is the central application for all students to administrate their studies, but independent from DissGo.

UZH MNF
→ **StudentAdmin**: https://studentadmin.mnf.uzh.ch/ , You will receive your login after successful matriculation at the UZH.

UNIBAS
→ **Dissertation Go (DissGo)**: https://www.dissgo.uzh.ch/login (for documentation of course work carried out in the program. You will receive your login after having sent the registration form for the PhD Program.

University of Zurich (UZH), Faculty of Science (MNF)

All doctoral students must register for a structured PhD Program with the signed registration form and the signed protocol from the admission interviews. Templates for both documents are available here:
https://www.plantsciences.uzh.ch/en/teaching/procedures.html

Furthermore, doctoral students must register to the UZH MNF by using the following link: Registration Doctoral Studies
http://www.mnf.uzh.ch/en/studium/phd/anmeldung.html.

For more information on the Graduate Schools and Doctoral Studies at the MNF, please visit the following website http://www.mnf.uzh.ch/en/studium.html.

ETH Zurich (ETHZ)

PhD students must be enrolled at ETHZ via the ETHZ Admission for Doctorate first (https://www.ethz.ch/en/doctorate/registration-admission.html). The PhD Program in Plant Sciences has been accepted as a structured program at the D-USYS and D-BIOL. As such it supports doctoral students to acquire the 12 ECTS within their regular doctoral studies (mandatory for all doctoral students).

All doctoral students must register for the PhD Program with the signed registration form and the signed protocol from the admission interviews. Templates for both documents are available here:
https://www.plantsciences.uzh.ch/en/teaching/procedures.html

University of Basel (UNIBAS)

Doctoral students must register to the UNIBAS, Philosophisch-Naturwissenschaftliche Fakultät by using the following link:
https://philnat.unibas.ch/de/forschung/promotionphd/immatrikulation-ab-hs-2016-registered-fall-semester-2016-or-later/.

All doctoral students must register for the PhD Program with the signed registration form. The template for the registration form is available here:
https://www.plantsciences.uzh.ch/en/teaching/procedures.html

2.3. Institution-specific regulations during your PhD study

You need to carry out your doctoral studies in accordance with the regulations of your home institution (ETHZ, UZH or UNIBAS), where the host laboratory is academically affiliated, and the research work is carried out. **Please refer to the regulations for doctoral students of ETHZ, UZH or UNIBAS in the first and of your home department/faculty in second level**. In the third level, you need to comply with the regulations of the PhD Program that are aligned with the regulations at the host organizations. On our website you'll find an overview table as a checklist of documents to be submitted during your doctoral studies: https://www.plantsciences.uzh.ch/en/teaching/procedures.html

University of Zurich (UZH), Faculty of Science (MNF)

For more information on the Graduate Schools and Doctoral Studies at the MNF, please visit the following website http://www.mnf.uzh.ch/en/studium.html.

Teaching requirements: The doctoral student must complete the "Planning teaching hours" form from the Department (Fachbereich) of Biology for the fulfilment of a **minimum of 150 teaching hours and maximum of 420 hours**. considering additional Department-dependent regulations. Planned teaching activities need to be submitted to UZH MNF StudentAdmin. Please consult the following website for details of the teaching requirements: https://www.biologie.uzh.ch/de/Studium/Doktorat.html.

Thesis Committee: The doctoral student and the supervisor select the thesis committee **six months after the beginning of the PhD project**. The composition of the committee has to be as following: at least three members, including the supervisor. Two members of the committee (including the chairperson) are from the MNF with "Promotionsrecht" (Professors with the right to confer a PhD). The thesis committee composition **must be communicated to the program office** and the UZH MNF via UZH MNF StudentAdmin. Members with "Promotionsrecht" can be consulted on the following website:
https://www.mnf.uzh.ch/en/fakultaet/fakultaetsangehoerige/promotionsrechtler.html.

The first Thesis Committee meeting should be held **6 – 12 months after the beginning of the PhD.** Subsequent meetings are held at least every 12 months. At least three members of the thesis committee (including thesis supervisor) have to be present. Participation of external members can also be arranged by using video conference systems. It is the responsibility of the doctoral student to set up the composition of the thesis committee, arrange the yearly thesis committee meetings, and document the activities. The thesis

committee meeting protocol, signed by all participants, is to be submitted to UZH MNF StudentAdmin **within eight weeks after the meeting** took place.

The doctoral candidate can be disqualified by the Dean of Studies, if the thesis committee finds at the yearly meeting that the progress of the PhD candidate is not sufficient.

All templates are available at:
https://www.plantsciences.uzh.ch/en/teaching/procedures.html

For details see: http://www.mnf.uzh.ch/en/studium/reglemente.html#4

Exam Registration and Doctoral Examination: The final degree is conferred by your home institution. For your registration to the examination, have a look at: (https://www.mnf.uzh.ch/en/studium/phd/checkliste-fuer-doktorierende.html)

ETH Zurich

Supervision: All doctoral students that have started the PhD after 01.01.2022 have to follow the new regulations of ETH Zurich.

Doctoral students at ETHZ are supervised by at least two people. The (1) official supervisor of the doctoral thesis (professor at the Department) and (2) the second advisor (an adjunct professor or Privatdozent/in, provided that (a) she or he works full-time at the ETHZ, and (b) both institutes have agreed). The second supervisor must be defined at the latest till submission of the doctoral plan. The doctoral administration (doktorat@ethz.ch) must be notified of the second advisor before the aptitude colloquium. Doctoral students have the right throughout the doctoral study to request another person to be available for additional professional or nonprofessional advice and support as needed.

Information about your doctoral studies at ETHZ and particular requirements of different ETHZ departments are available here:
https://ethz.ch/students/en/doctorate.html
https://ethz.ch/en/doctorate/legal-basis.html.

Departments D-USYS and D-BIOL

Doctoral Plan (replaces Research Plan):

A written research proposal, including the research plan and teaching requirements, is to be defined in minimum 15 working days before the Aptitute Colloquium (D-USYS) and latest 10 months (D-BIOL) after registration. Should a thesis be carried out outside the ETHZ domain, it should be specified in the doctoral plan. The doctoral plan needs to be submitted to the aptitude committee and the doctoral studies panel (Deadline, see ETHZ MyStudies).

Aptitude Colloquium: The aptitude colloquium is an oral defense of the research plan to be held at the latest 12 months after registration at ETHZ (see MyStudies). The defense lasts around 60 minutes including a presentation by the doctoral student (max 30 minutes) and a discussion between the doctoral student and the aptitude committee about the doctoral plan. The aptitude committee is composed of the chairperson and the Thesis Committee. The chairperson must be (a) a member of the doctoral studies panel (Doktoratsausschuss) or (b) a person appointed by the doctoral studies panel who must be a full or associate professor at ETHZ department. The PhD-Student is responsible to organize the aptitude colloquium, which can be conducted with partial or full physical presence of the aptitude committee and the doctoral student or entirely by video conference.

Information on the Doctoral Plan and Aptitude Colloquium:
https://ethz.ch/students/en/doctorate/doktoratsplan.html
https://ethz.ch/en/doctorate/legal-basis.html

Information for submission of the Doctoral Plan:
D-BIOL: https://biol.ethz.ch/en/doctoral-studies/doktoratsplan---eignungskolloquium.html
D-USYS: https://usys.ethz.ch/en/doctorate.html

Progress report (replaces Thesis Committee Meeting Protocol): All doctoral students must complete progress reports. This is due after the appointment of a second supervisor. The PSC recommends involving external partners or supervisors. The progress report must be completed annually. The progress report forms the basis for the annual status conversation. The document must be kept for the entire duration of the doctorate. The duty of safekeeping is incumbent on the persons involved (doctoral students, dissertation supervisors, second advisors)!

Annual status conversation: All doctoral students must have an annual status conversation with the supervisor of their doctoral thesis. This is due after the appointment of the second supervisor. The supervisor of the doctoral thesis will determine the date. It consists of 2 parts and covers the following topics: Part 1 (Scientific Progress) and Part 2 (performance assessment, career, and personal development).

The minutes of the status conversation must be kept for the entire duration of the doctorate. The duty to keep the minutes is incumbent on the persons involved (doctoral students, dissertation supervisors, second advisors)!

Exam Registration and Doctoral Examination: The final degree is conferred by your home institution. For your registration at the doctoral administration, have a look at:
https://ethz.ch/students/en/doctorate/doktorpruefung.html

UNIBAS, Philosophisch-Naturwissenschaftliche Fakultät

Thesis Committee: The doctoral committee consists of a First Supervisor, a Second Supervisor, external members (e.g., experts and other experts, subject to application). The thesis committee composition must be communicated to the PhD Program office by submitting the Doctoral Agreement (i.e., UNIBAS Doktoratsvereinbarung) to DissGo.

The first **Thesis Committee Meeting** should be held 6 – 12 months after the beginning of doctoral studies. Subsequent meetings take place at least once a year. The signed thesis committee meeting protocol (i.e., UNIBAS Doktoratsvereinbarung) must be submitted to DissGo **within eight weeks after the meeting took place.** You can find the templates for the protocol on the following webpage of the PSC:
https://www.plantsciences.uzh.ch/en/teaching/procedures.html

For further description, please refer to:
https://philnat.unibas.ch/fileadmin/user_upload/philnat/3_Forschung/14.12.21_II_Doctoral_studies_-_Guidelines_Version_11.2021_english.pdf

Exam Registration and Doctoral Examination: The final degree is conferred by your home institution. Please study the document provided by the faculty:
https://philnat.unibas.ch/de/forschung/promotionphd/immatrikulation-ab-hs-2016-registered-fall-semester-2016-or-later/

2.4. Admission to Courses

We accept PhD students from LSZGS programs or Postdocs into our courses, if spaces are available. PSC students registered in the PSC PhD Programs have enrolment priority. For PhD students registered in LSZGS programs, all courses of the PSC PhD Programs are fully recognized. PhD students select their individual course work in agreement with their PhD supervisor or their PhD thesis committee.

2.5. Confidentiality

It is an important goal that the participants of the PhD Program exchange their scientific results between different institutes and their host institution. Any such results shall be kept strictly confidential by all participants of the program and shall not be disclosed to persons outside of the program if the results are not published by the author/originator of the results. No participant of the PhD Program shall use any scientific result to the detriment of one of the host institutions. No participant shall impair a host institution's right to seek protection for intellectual property contained in such results by a way of a premature publication or other premature disclosure of results.

3. Curriculum, Course Catalogue, Certification

3.1. Curriculum

The PSC PhD Program in Plant Sciences allows to acquire 12 ECTS (at ETHZ and UZH and 18 ECTS at UNIBAS to complete their regular doctoral studies:

- In total, min. 12 credits (ECTS) acquired from lectures, courses, workshops, or summer schools are accredited in our regular curriculum. 1 ECTS is equal to 25-30 learning hours (this equals either a lecture of 1 hour per week during one semester or a full two- to three-day workshop including homework and preparatory work).
- **Course on Research Integrity: All students of ETHZ, UZH and UNIBAS** must attend a lecture/course of research integrity and responsible conduct in research.

  All students of **UZH and UNIBAS** must visit the LSZGS introduction event "Introductory Lecture to Good Scientific Practice and Scientific Integrity" (2 hours, no ECTS). Within the event you will sign the declaration of "Good scientific practice" that will become a part of your DissGo (UNIBAS) or MNF StudentAdmin (UZH) documents. Please, register via the LSZGS website: https://www.lifescience-graduateschool.uzh.ch/en/courses.html. NEW! Please generate a login (register) on the Participant Homepage (see previous link) first!

  Alternatively, students of **UZH and UNIBAS** can register for the spring term course "Ethics and Scientific Integrity for Doctoral Students (701-5001-00L)" via Daylight. Here, places are reserved for PSC members (i.e., UZH and UNIBAS).

  All doctoral students of **ETHZ** must visit a course on "Research Integrity" at ETHZ (1 ECTS) offered every term in your department. The PSC offer is linked to "Ethics and Scientific Integrity for Doctoral Students (D-USYS, 701-5001-00L)". Please register via MyStudies.

Table 1. Curriculum.

Activities	ECTS
Compulsory Activity: **Policy Workshops:** 4 out of Policy workshops A - F: • Course A: Evidence-based Policymaking in Plant Sciences • Course B: Stakeholder Engagement • Course C: Communicating Science • Course D: Building Political Support • Course E: Analysis and Communication of Risks and Uncertainties • Course F: Understanding Policy Evaluation 1 Lecture in **Basics of Policy Sciences** (e.g., Introduction to Political Sciences, 1 ECTS)	Min 9

At ETHZ: 1 ECTS through visiting a course on **Research Integrity** in your department. Register in MyStudies. *For details, see section "Course on Research Integrity*. At UZH and UNIBAS: In minimum the LSZGS "**Introductory Lecture to Good Scientific Practice and Scientific Integrity**" (0 ECTS) must be visited. *For details, see section "Course on Research Integrity"*.	
Elective Activities: Remainder of 12 ECTS may be chosen from*: • Strategic Foresight and Scenario Building (1 ECTS) • Transforming and Changing Social Practices (1 ECTS)	up to 2
Other Elective Activities: * • Other Technical Courses or Transferable Skill Courses from PSC, LSZGS, GRC, GRACE) • Participation in international scientific symposium with own scientific contribution (oral or poster presentation) (max. 1 ECTS) • Part of PSC PhD Symposium organization committee (2 ECTS) • ETHZ: committee work (min. 1 year of participation) (1 ECTS) • UZH: Engagement in Green labs (max. 2 ECTS): Refer to the PSC website for detailed information: https://www.plantsciences.uzh.ch/en/teaching/coursecatalogue.html	
	Min 12**

* With approval from principal investigator or thesis committee.
** At UNIBAS, a total of 18 ECTS are requested.

Details and registration: https://www.plantsciences.uzh.ch/en/teaching/coursecatalogue.html.
Transferable skill courses are also offered by the **Life Science Zurich Graduate School (LSZGS)**:

Note that all ECTS acquired outside of ETHZ, UZH, UNIBAS or associated PhD Programs need a confirmed accreditation through the PSC office. Fill the form to get the accreditation of external ECTS:
https://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy/procedures.html

3.2. Course Catalogue

3.2.1. Science and Policy Workshops (A to F)

Please note: In the weeks between the two workshop days, you should take some extra time for group and individual work of min. 30 hours.

Workshop A: Evidence-Based Policymaking (2 ECTS)

The aim of this course is to develop skills and actions to improve the effectiveness of science in informing policymakers and in engaging with the policymaking process. The lectures will introduce the concepts of environmental governance and evidence-based policymaking, as well as the policy cycle as an underlying conceptual normative framework. Participants will reflect on their role as scientists with a special focus on the idea of an honest broker. In the case studies, participants will work with concrete examples of policymaking and learn how scientific results are translated to become policy relevant.

All participants will interview policymakers on their experiences with scientific information in policymaking. Additionally, all participants will formulate a policy brief for the real-world problem that they have chosen intended to inform policymakers in a short and concise way on the existing research evidence.

The second course day is dedicated to the presentation and discussion of case studies.

Specific learning objectives are:

- Discuss the concepts of evidence-based policy-making and environmental governance.
- Know factors that influence the policy-making process aside from evidence.
- Get to know the policy cycle as a normative conceptual framework.
- Become reflective on the different roles that scientists can take in the policy process.
- Analyse the policymaking process in real-life examples of regional, national, or international policies.
- Explore how policy-relevant evidence is produced and incorporated in practices.
- Formulate a policy brief or fact sheet and translate scientific findings for policy.

Individual performance and assessment: Attendance and active participation during the two course days (16 hours). In the weeks between the two workshop days, you should plan for available time for group work and individual work of min. 30 hours on the group cases. Case study work involves literature research, expert interviews, and group discussions. 10 hours are reserved for self-study of the workbook (see below) and of literature.

Literature: Paschke M., Pfisterer A. (2019). **Evidence-based policy making**. With contributions by: McNally, K., Herrendörfer, R., Hirschi, C., Last, L. Pauli, D., Studer, B. and J. Schubert. https://doi.org/10.3929/ethz-b-000308533

Workshop B: Stakeholder Engagement (2 ECTS)

During their work life, most life scientists will have to deal with issues relating to the development of their field, some of which may be subject to controversial debates in society and politics. They may be asked to give advice to governmental institutions on policies relating to natural resource governance, conservation, sustainable use of ecosystems, and others. Life scientists may also be invited to participate in stakeholder engagement processes, as experts, as representatives of the scientific community or other organizations or sectors they may work for.

Communicating and collaborating effectively across the boundaries and differences of various stakeholder groups and engaging constructively with representatives from government, business and civil society in multi-stakeholder processes will be key competencies in this context. In this course, students will learn to understand different stakeholders and multi-stakeholder processes, and effectively engage in multi-stakeholder settings. The course will combine presentations of background information, practical exercises, group discussions and individual reflection.

Specific learning objectives are:

- Gain understanding of stakeholder engagement and multi-stakeholder processes.
- Get an overview as to where multi-stakeholder processes could play a role.
- Identify and analyze stakeholders
- Understand how to engage with different stakeholders and work effectively in various multi-stakeholder settings.
- Analyze different levels of engagement, including their strengths and weaknesses.
- Learn about criteria and methods for evaluating stakeholder engagement processes.

Individual performance and assessment: Attendance and active participation in the face-to-face course days (25 hours). To obtain the credit points, participants are required to study the pre-reading before the workshop (5 hours), to hand in an individual and group assignments to be carried out in between and to prepare a case study in the group to be presented during the second course day (30 hours).

Literature: Hemmati, M. (2020). **Stakeholder engagement.** With contribution by: Maier, B. https://doi.org/10.3929/ethz-b-000308464

Workshop C: Communicating Science (2 ECTS)

Scientists in all fields are expected to perform public outreach occasionally on matters ranging from research funding to assist policymakers in taking decisions. In doing this, they face challenges. Challenges range from being clear, convincing, accurate, and, at the same time, engaging. Academic researchers play an essential role in allowing policymakers to develop and properly assess science policy options, speaking to the media, and contributing to the improvement of public's critical thinking.

In this course, students will learn basics on how to communicate science in an effective way to the media, policymakers and a wider public. They will be introduced to different communication tools and best-practice examples.

Students will:

- Identify and communicate aspects of their research to different stakeholder groups.
- Practice writing techniques to effectively reach a non-specialist audience.
- Know and use different communication tools.
- Comprehend science communication as an ongoing dialogue.
- Practice public speaking techniques to react to interviews and a non-specialist audience

Although the course is geared to practical issues, it is also grounded in the latest theory and practice of science communication.

Individual Performance and Assessment: Attendance and active participation during the two face-to-face course days (16 hours). In the weeks between the two workshop days, you should plan for available time for group work and individual work of 40 hours.

Literature: Pfisterer, A., Paschke, M. and J. Pasotti (2019). **Communication science through the media**. https://doi.org/10.3929/ethz-b-000314920

Workshop D: Building Political Support (2 ECTS)

During the last decades different ways of bridging science and policy have been explored. Policy is understood as a principle or guideline for action in a specific context. In this course, the students shall learn what kind of actions are necessary to implement policies in different sectors, such as the governmental system, the public agencies, civil society, or the private sector. Who are the main actors and when do they need to be involved?

Decision and policymakers in Switzerland and the process of policy endorsement - This lecture gives an overview on main actors in the policy-making process in Switzerland.

Decision and policymakers in the European Union and the process of policy endorsement - This lecture introduces the essential steps in the process of policy endorsement in the European Union and ways to form alliances with policymakers at European scale. Getting support from policymakers will depend, among others, upon convincing them of the benefits that implementing the actions can provide and upon the timing. The aim of the course is to know where it is possible to exert influence on the political process as a scientist, an expert, a lobbyist or an interested Swiss or European resident/citizen. Knowing the decision makers is central to exerting influence on negotiations and decision-making processes.

In the hands-on training participants will get to know the advocacy cycle, the Problems-Causes-Effects Tree, carry out actors mapping and learn about different tools for advocacy approaches to build up an individual advocacy environment for a certain topic.

Additionally, a visit to the Swiss Parliament and an interview with a parliamentarian is scheduled.

Specific learning objectives are:

- Identify the relevant policy- and decision-making sectors in Switzerland and the European Union.
- Identify the relevant political actors on the national and international level for specific topics.
- Understand when and how to become involved in the policy cycle.
- Learn about advocacy and strategies to advocate your topics at the science-policy interface.

Individual Performance and Assessment: Students work in case study groups fulfilling different tasks. Please note: In the weeks between the three workshop days (24 hours) you should plan for available time for group work and individual work of 36 hours.

Literature: Bütitikofer, S. (2019). **Building political support.** With contributions by: Falk, M., Last, L., Neu, U., Paschke, M., Pavageau, C. and C. Rey. https://doi.org/10.3929/ethz-b-000312492

Workshop E: Analysis and Communication of Risks and Uncertainties (2 ECTS)

The reliability of scientific data and models are frequently subject of public and political debate. The aim of this course is to understand the concepts of risk, uncertainty, and ignorance in relation to these data and models in order for course participants to be more aware of and work more effectively at the science-policy interface. Additionally, we will explore communication tools and strategies linked to risk and uncertainty, including different public engagement strategies.

During workshop day 1, lecturer will introduce the concepts of risk, uncertainty, and ignorance. Participants will get to know sources of uncertainty in scientific data and models, how to deal with uncertainty in quantitative models, and limits of uncertainty quantification. In an accompanying exercise, the participants will get hands-on experiences with applying quantitative uncertainty models to practical examples, including the representation and communication of uncertainty.

Workshop day 2 is dedicated to risk perception and building behavioural changes and trust through public engagement. After an introduction into the relevant tools and theories, students will be offered insights from past projects of the Risk-Dialogue foundation St. Gallen. In the afternoon, students will have the opportunity to test their own strategies for risk communication via case study work considering real world examples of risk communication, public engagement, and related best practices.

During the morning session of workshop day 3, the lecturer will focus on risk and uncertainty communication. When communicating to policymakers and lay persons good practices can be followed to avoid misunderstanding or misconception by the target auditory both in written and in oral presentations and to make research results and messages be understanding.

The afternoon session intents to provide insight into a) argument-based tools for understanding why uncertainty arises scientific assessments and how it can be assessed. Tools will be introduced to characterize uncertainties based on specific modelling assumptions.

b) the actual work of scientists and agencies considering risks and uncertainties at national and international scale. Here, a guest speaker will present the Swiss Centre for Technology Assessment (TA-SWISS) and its role as well as approaches and public communication in assessing risk and chances of technologies while contributing to parliamentary processes.

Specific learning objectives are:

- Understand concepts of risk, uncertainty, and ignorance
- Apply quantitative and qualitative models to measure uncertainties.
- Understand the role of risk-based evidence as a decision framework for policy choices.

- Understand the concept of risk perception and how to deal with it in public engagement.
- Develop effective strategies for communicating risk and uncertainty.

Individual performance and assessment: Attendance and active participation in the course (24 hours). To obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (36 hours).

Literature: Beuttler, C., Paschke, M. (2020). **Risk and uncertainty communication**. In: Paschke, M., Dahinden, M. (eds.): Engaging in the Science-Policy Dialogue, Workbook 4. Zurich: Zurich-Basel Plant Science Center. https://doi.org/10.3929/ethz-b-000340471

Workshop F: Understanding Policy Evaluation (2 ECTS)

The course provides a general overview of different policy evaluation approaches, as well as opportunities for concrete applications and reflections on impact models. It aims at discussing how, when, by whom and for what purpose policy is evaluated as well as under what conditions the effectiveness and efficiency of a policy can be measured. Based on the theoretical and methodological introduction on policy evaluation conducted by social scientists, participants reflect on how natural science can contribute to policy evaluation and on how research can become socially relevant. Between the first and the second workshop day, participants are solving a case study (in groups or individually). The main objective of the case study is to practice the application of logic models.

Specific learning objectives are:

- Know different types of policy evaluation and their methods.
- Understand logic models and theory of change in the context of policy evaluation.
- Gain insights on how policy evaluation helps to improve policy implications.
- Apply policy evaluation logics in a case study.

Individual performance and assessment: Attendance and active participation in the course (16 hours). In order to obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (44 hours).

Literature: Paschke, M. and S. Studer (2019). **Generating impact chains.** With a contribution by: K. McNally. https://www.research-collection.ethz.ch/handle/20.500.11850/315536

3.2.2. Basics of Policy Sciences

We are offering a tailor-made block course, which gives you a broad overview over political processes and the world of policymaking:

Introduction to Political Sciences (1 ECTS)

The course is an introduction to politics in a globalised world, with a focus on how political science tries to understand and explain cross-country and cross-time differences. The course will begin by introducing students to some of the main empirical variations in political behaviour, institutions, and actors, focusing mainly on democratic and partially democratic countries. We mainly discuss theoretical approaches to the study of politics and policies across a range of states, international organizations, and issue areas. Students will learn about the influence of political actors on decision-making processes, political negotiations, and public opinion. The course involves interactive elements, movie scenes and discussions. The students are also asked to participate in an in-class assignment to obtain the ECTS points.

Individual Performance and Assessment: To obtain the 1 ECTS point, each participant is required to actively participate in the in-class assignment and discussions during the course days (14 hours). In addition, participants are expected to: Prepare for the second day a written group essay and a short presentation. The essay mainly consists in answering a couple of questions concerning the chosen country. The essay should be no longer than 6000 characters. The preparation work for the essay including literature study before the course is 16 hours.

Alternatively, to this course, you can choose from several lectures in policy sciences (min. 1 ECTS). For an updated course catalogue that meets our criteria to be of high benefit for a basic introduction into the political sciences, please go to our website: https://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy/courses/approved.html

For students from the UNIBAS who want to follow lectures at the ETHZ: Please note that pursuant to an official agreement all students from the PSC may register at ETHZ as a **Special students PhD**. Complete the registration form as Special Student "UBa – PSC" (https://www.ethz.ch/content/dam/ethz/main/education/non-degree/fachstudierende/formulare/90en/registrationform-special-uba-psc-en.pdf). Please send the signed form together with a copy of your student ID to the PSC office: Zurich-Basel Plant Science Center, ETH Zurich, TAN, D 5.1, Tannenstrasse 1, 8092 Zurich. Only then can we guarantee that you can take these courses at the ETH free of charge. For registration to these courses please go to: ETHZ MyStudies (https://www.lehrbetrieb.ethz.ch/myStudies/loginPre.do?lang=en)

3.2.3. Specialized Science and Policy Courses

Strategic Foresight and Scenario Building (1 ECTS)

The most innovative scientists, government officials and business executives regularly reflect on the challenges and changes lying ahead 5, 10 or 20 years from now. Some of today's most progressive governments and corporations seek to understand the different future contexts for which they might need to equip themselves in the long-term future. In the process of such reflection and strategic planning, many turn to the scenario building methods as an effective tool for a structured thinking/analysis of one's future contexts.

This seminar is a practice-oriented learning experience that dives into the scenario development/building methods and their concrete applications. The seminar will combine lectures and theme-specific discussions with a workshop allowing participants to develop their own scenarios.

3.2.4. Technical Courses and Transferrable Skills Courses

A wide range of technical courses and on transferable skills for PhD students are available within the PSC PhD Program Plant Sciences. Details and registration: https://www.plantsciences.uzh.ch/en/teaching/coursecatalogue.html

Transferable skill courses are also offered by the **Life Science Zurich Graduate School**:

http://www.lifescience-graduateschool.ch/graduate-courses/transferable-skill-courses.html, by the **Graduate Campus (GRC)**, UZH: http://www.ueberfachliche-kompetenzen.uzh.ch/index.html and by **GRACE, UNIBAS:** https://www.unibas.ch/de/Forschung/Graduate-Center/Doktorierende/Training-Coaching-und-Beratung/Transferable-Skills.html

(NOTE for GRC courses: ETHZ and UNIBAS students: Contact the PSC PhD Program Coordination Office (psc_phdprogram@ethz.ch) if you want to register for these courses. We have to confirm your PhD program registration.)

3.2.5. Other Courses offered through the Universities

Excellent English language skills are one of the requirements for successful completion of the PSC PhD Program. Additional training can be obtained through:
Language Skills for PhD students of UZH and ETHZ: http://www.sprachenzentrum.uzh.ch

Courses of the **Didactica** Program of UZH: Some of the courses offered by "Hochschuldidaktik UZH" can be finished with ECTS (active participation and individual assessment necessary).

Details and registration: http://www.hochschuldidaktik.uzh.ch/de.html

3.2.6. Poster presentation at an International Conference (max. 1 ECTS)

We can award 1 ECTS for a poster or oral presentation at an international conference. We need a pdf of the poster, resp. the presentation abstracts as proof.

3.2.7. PSC PhD Symposium (2 ECTS)

Note: every two years

Together with a group of 5 – 6 PSC PhD students, you will be responsible for the organization of an international and interdisciplinary PSC symposium (https://www.plantsciences.uzh.ch/en/outreach/conferences/pastsymposia.html).

As a member of the scientific and organization committee, you will fulfil the following tasks:

- Together decide on the symposium topic
- Invitation of scientific speakers to contribute to a high-quality scientific program
- Organization of the symposium day

3.3. PSC PhD Certification in Science and Policy

The PSC issues a PhD Program certification (= diploma supplement incl. a transcript of all records) after all requirements have been fulfilled and the Doctoral Degree Certificate of your home university has been awarded. Successful completion is based on fulfilling the curriculum (see also point 3. Curriculum):

For receiving the PSC PhD Program certificate, please upload all certificates (pdfs) of training activities to DissGo (ETHZ, UNIBAS) or UZH MNF StudentAdmin (UZH) and send a copy of your Doctoral Degree Certificate to the PhD Program coordinator via E-Mail (pdf).

4. Reimbursement of Travel Expenses for PhD students at UNIBAS

Doctoral students from UNIBAS enrolled in our PSC programs can ask for reimbursement of their travel expenses (bus or train ticket, 2nd class) to PSC training events. Contact your secretariat and present your ticket/receipt for reimbursement.

5. Legal basis for the PhD Program regulations at the home institutions

UZH

- Verordnung über die Promotion an der Mathematisch-naturwissenschaftlichen Fakultät der Universität Zürich (Promotionsverordnung) vom 31. Januar 2011.
- Doktoratsordnung für die Promotion an der Mathematisch-naturwissenschaftlichen Fakultät der Universität Zürich vom 13.12.2012.

ETHZ

- Ordinance on Doctoral Studies at the Swiss Federal Institute of Technology Zurich (Ordinance on Doctoral Studies ETH Zurich of 21st November 2021 (Version: 01. Jan 2022) (https://rechtssammlung.sp.ethz.ch/Dokumente/340.31en.pdf).
- D-USYS: Department of Environmental Systems Science (D-USYS) Detailed regulations for Doctoral Studies D-USYS (as of 01 Januar 2022).
- D-BIOL: Department Biology (D-BIOL) Detailed Regulations for Individual Doctoral Studies D-BIOL (as of 27 Januar 2022).
- Detailed regulations for individual doctoral studies (further ETH Departments) are available online: https://ethz.ch/en/doctorate/legal-basis.html.

UNIBAS

- Promotionsordnung der Philosophisch-Naturwissenschaftlichen Fakultät der Universität Basel vom 15. September 2015 (https://www.unibas.ch/dam/Oeffentliche-Dokumente/Rechtserlasse__LegalRegulations/Phil.-Nat.Fakultaet__FacultyofScience/Promotion__Doctorate/446_730_P_Phil_Nat_00.pdf).